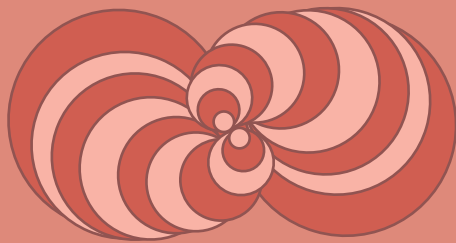


# Sensory Design

I perceive, feel, sense



## Sensory Design

*We are used to think of aesthetics to be something visual, but the word's origins are in the Greek “aisthanomai”, meaning*

“I perceive, feel, sense”

# Content

Abstract				
<b>Introduction</b>			8	
Research methods				
<b>Part 1</b>				
<b>Theoretical background</b>				
Multisensory design	...	...	...	11
Experience of eating	...	...	...	12
Food design	...	...	...	13
Multisensory design and the food industry			...	14
On sensoriality	...	...	...	16
From senses to memories	...	...	...	16
Sensation vs. Perception	...	...	...	17
Sight and colour			...	17
Smell, taste, touch, and the complexity of flavour			...	18
Synesthetics and the Cross-modal correspondence			...	22
Shapes of food			...	23
Senses and emotion in branding		...	...	25
Case study: Valio and Finlandia	...	...	...	26
The story of Valio	...	...	...	26
The story of Finlandia	...	...	...	27
Objectives	...	...	...	27
<b>Part 2</b>				
<b>Design research and insights</b>				
The associations of Valio and Finlandia	...	...	...	30
Finlandia moodboard 1.		...	...	30
Finlandia moodboard 2.		...	...	31
Valio Moodboard 1.	...	...	...	34
Valio Moodboard 2.		...	...	34
Inserting emotions and atmosphere			...	37
Focus group: Millennials		...	...	37
Field research and consumer visits	...	...	...	38
<b>New York</b>			...	39
Findings and insights from New York			...	41
<b>Boston</b>	...	...	...	41
Objectives	...	...	...	42
Interviews			...	42
Findings and insights from Boston			...	46
Cross-modal association test		...	...	48
Objects, texture, and mouthfeel		...	...	49
Findings and insights	...	...	...	50
<b>Part 3</b>				
<b>Production and the design process</b>				
Design philosophy	...	...	...	56
Inspiration	...	...	...	57
Final pieces			...	60
<b>Curiosity boards of Valio and Finlandia</b>			...	60
Constructing sensorial identities			...	61
Finlandia –Summer Evening at the Cottage			...	65
Valio –Summer Morning in the Countryside			...	68
<b>Mouthfeel of cheese</b>	...	...	...	70
Materials	...	...	...	70
Designing and making	...	...	...	70
<b>Conclusion</b>				76
Reflections				
References				78
Acknowledgements				

**Heli Juuti**

Master Thesis  
2018

**Aalto University**

School of Arts, Design, and Architecture  
Department of Design

**Contemporary Design MA**

Applied Art and Design

**Supervisor**

Jaana Beidler

**Advisors**

Tiina Aarras  
Hanna Hiekkamies

## Abstract

Sensory design is a design practice aiming at activating our senses. The human senses are commonly divided into sight, hearing, touch, smell, and taste. Through a systematic increase of sensory richness of products, services, and environments, our encounters can become more immersive, holistic, and feel more meaningful. In the past years sensory design has gained growing attention amongst professionals and experts across different fields.

In my case study I am exploring two dairy brands through a multi-sensory approach: Valio, the biggest Finnish dairy producer in the domestic market, and Finlandia; Valio's US based branch. One of the aims of this thesis is to familiarise Valio with the concept of sensory design and explore how the brands could be developed further in this area.

This thesis can be divided into three parts; theoretical background, field research, and the design process and production of the final pieces. Theoretical background briefly opens up the concept of sensory design, before focusing on the framework for this particular study. Sensory experiences related to food and eating are the focal point of my research and the design process. Field research focuses on a research trip conducted in the United States in March 2018, and cross-modal association tests held in Helsinki, Finland, over the course of two weeks in April 2018. The last part illustrates the design process behind the two final pieces: sensorial identities developed for Valio and Finlandia, and conceptual artwork inspired by the mouthfeel of cheese.

**Keywords:** *Multisensory design, senses, sensorial identity, conceptual design, holistic experience, perception, food and eating, mouthfeel, synesthetic design, cross-sensory, cross-modal correspondence, shape symbolism, colour and material design*



## Introduction

Sensory design is a design practice aiming at activating our senses through a systematic increase of sensory richness of products, services, and environments in order for the experiences to feel more immersive, thus being regarded as more holistic and meaningful. In the past years it has gained growing attention amongst artists, designers, and academics alike as more research has emerged to suggest that senses, constantly interacting with the environment, fundamentally impact all our actions and decisions by sending us conscious and subconscious messages, which we react to. Sensory engagement is suggested to impact our emotions, memories, and perception, and thus could be regarded as a powerful tool for designing, researching and marketing.

Eating is our primary need, and also one of the most multisensory of our daily experiences stimulating our senses of sight, sound, smell, touch, and taste, making the subject of food a fruitful platform for exploration and experiments. Growing number of companies in the food and beverage industry are active in the research of sensory design and how it is harnessed to enhance the brand experience.

Valio, the biggest Finnish dairy company in the domestic market, commissioned the case study for this thesis. I was set out to study Valio and their US based brand Finlandia in the scope of sensory design and to explore how the brands could be developed further in this area. The particular interest and objectives were colour and material design for both brands and defining sensorial assets that would enable Valio and Finlandia to build more emotionally compelling brand identity domestically and in the US markets.

In order to meet these objectives a holistic understanding of sensory design had to be acquired, thus various themes and practices considering to be linked with sensory design such as multisensory design, synesthetic design, and cross-modal correspondence are introduced. The focus of this thesis is on food and eating, so related design practices and studies such as food design and shape symbolism are looked at. Human sensoriality is discussed with a particular emphasis on flavour

and oral-somatosensorial experience or *mouthfeel*; the contributing senses of touch, smell and taste being introduced in more depth. In addition to the theoretical research, a field research and in-depth interviews were conducted in the US, as well as a cross-modal correspondence test in Finland in order to gather firsthand knowledge, insights and inspiration for the process and the final design.

## Research methods

This thesis can be divided into three parts: theoretical background, design research and the design process and production of the final pieces.

The first part of the thesis illustrates the background and foreknowledge of sensory design, introducing other relevant practises, research, and themes, based on secondary data research such as literature reviews and online lectures. Aspects of human sensoriality and sensorial functioning are introduced, and previous scientific and academic publishings are used to discuss how sensorial approach could benefit design processes and outcomes.

The second part of the thesis focuses on design research and collecting primary data on the topic and for the case study. Design research “isn’t a scientific endeavor aimed at finding truths” (Freach, 2011, para. 2), it is to inspire the process of design, and is therefore considered qualitative in its nature. Explorative and ethnographic methods were also studied in order to inspire the framework of interviews and experiments conducted in Finland and the US.

The third part of the thesis consists of the design process, covering my personal design philosophy, inspiration and the production stages of the final pieces. Findings generated from the design research phase contribute to the conceptualization of the final designs.

## Part 1

### Theoretical background

#### Multisensory design

*Multisensory design* can be defined at its simplest as designing for senses. The human senses are commonly divided into sight, hearing, touch, smell, and taste, and they can also be referred to as sensory *modalities*. These basic senses, or modalities, function as communication channels through which we receive information, and make sense of our surroundings. Many other forms of sensory cells exist, but these five senses encompass the basis of the multisensory theory (Haverkamp, 2012).

Human perception is already fundamentally multisensory of nature (Haverkamp, 2012), but when discussed and analyzed in the context of design practise 'multisensory' tends to refer to designers' aim to consciously extend the sensory richness of products, environments, services and media in order for the encounters to feel more inclusive and immersive (Lupton & Lipps, 2018). Multisensory design aims to appeal to our minds and bodies through a stimulation of different sensory channels: visual, auditory, kinesthetic, olfactory and gustatory.

#### O

It has been argued that modern life has become increasingly un-sensory, as the rapid advancements in technology have resulted in decreased amount of everyday sensory encounters (Youssef & Spence, 2016). For

example, when the experience of reading a newspaper or a magazine is transformed into a digital form, we lack elements such as touch and feel of the paper, the rustling, and the smell of ink and glue binding. Almost as an objection to the digital age, artists, designers and aesthetics of everyday life now seem to suggest a growing demand for implications of the senses. A strong trend in hand-made objects, tactile materials and surfaces can be seen: they invite us to perceive in a more holistic way. Prevailing ethos seems to be that the more holistically we perceive things, the more enjoyable and memorable we may regard them. Don Norman, a professor of Computer Science, Psychology and Cognitive Science, and the director of the Design Lab in the University of California, argues that sensations are critical in assessment of practically anything as “we are, after all, biological creatures, with physical bodies, arms, and legs. A huge amount of the brain is taken up by the sensory systems, continually probing and interacting with the environment” (2004, p. 79). The best experiences, according to Norman, make full use of this interaction.

New research confirms the idea that as we perceive the world through our senses, our bodily sensations impact the decisions we make often without our conscious awareness (Krishna & Schwarz, 2014). The idea is rooted in neuroscience, according to which strong emotional responses in us lead to creation of sensory memory, which again contributes to our long-term memory, meaning that we are more inclined to reminisce the experience and thus regard it as more meaningful (Matheny, 2016). Many researchers have observed a notable shift towards the development of more sensorially engaging experiences, services and products. The theory that sensory engagement indeed affects our emotions, memories, and perceptions, and thus what we choose to experience and consume, seems to gain growing acceptance (Krishna, 2010; Krishna, Cianb & Aydınoglu, 2017; Lindström, 2005).

## Experience of eating

Many people would regard eating as one of the most enjoyable experiences. It can be considered as highly multisensory, as it stimulates our senses of smell, taste, sight, touch and hearing (Youssef & Spence, 2011). We see and smell the food we’re eating, we touch food as we

prepare and consume it, and feel and taste during oral processing. We use the term *flavour* generally to describe taste and aroma, but in a scientific context flavour is regarded as the holistic perception of multiple sensations such as smell, taste, texture, thermal and kinesthetic effects as well as visual presentation of the food (Choi, 2013).

It has been studied that out of all the senses, smell and taste have a potential to evoke some of the strongest emotional feedback in us (Spence, 2015). Scientists and psychologists have observed that the processing of smell and taste happen in the part of the brain that is also responsible for creating memories, and memories again impact us emotionally (Matheny, 2016).

## Food design

Possibly due to their highly sensorially stimulating effects, the concepts of food and eating have been considered and utilized as platforms for exploration, communication, and experimenting by sensory designers. Previously in neurogastronomy, but more recently in the emerging field of *Food design*, the professionals have been designing experiences aiming to awaken the senses by heightening them, stirring them up, or delivering some food for thought.

“Designers who work with the subject of food are often called food designers”, says Marijke Vogelzang, the founder of Dutch Institute of Food and Design (Vision on Food and Design, n.d., para. 1). The areas that food designers work within can extend from the visual presentation of food, to dealing with larger concepts surrounding food consumption and the experience of eating such as its psychological effects, the origins of food, preparation, etiquette, history, and the culture around eating; often aiming at challenging the existing preconceptions. Food design is considered highly interdisciplinary of its nature, as it often involves a diversity of methodologies and philosophies related to both food and the practice of design (Wist, 2015). Therefore the term ‘food design’ can be considered to be problematic in its definition (Wist, 2015).

For example, Giulia Soldati’s graduation project ‘Contatto’ from the Design Academy Eindhoven, explores our interaction with food from a perspective of removing all the distractions between the food and the

person. A hand is used both as a plate and cutlery; each course of food is prepared by hand straight onto the viewer's hand, from where it is eaten. The project aims to question and challenge the barriers we've created between our sensory perception and the world around us, and to neglect essential sensorial experiences, such as touch, back to the to the process of eating. (Contatto – A New Culinary Culture, n.d.)

New York based food designer Emilie Baltz again focuses on bringing out the fun and delight in the interaction of food and the senses. In her project 'Color Feast' the guests were served a menu of all white foods under changing colour light, aiming to explore the effect that colour has on our perception of taste.

She also frequently holds lectures and workshops sharing insights into her practice. In the food design workshops she encourages students through creative and playful assignments to consider the sensory experience of their work, alongside their ethical, aesthetic, historical and political implications. (Emilie Baltz – Storytelling for the Senses, n.d.)

Food can be religiously, politically and ideologically charged as a subject, but it can also function as connector or a mediator between different cultures. Through food we can educate and learn about each other.

### **Multisensory design and the food industry**

"In the past, communications with customers were essentially monologues –companies just talked at consumers. Then they evolved into dialogues, with customers providing feedback. Now they are becoming multidimensional conversations, with products finding their own voices and consumers responding viscerally and subconsciously to them." (Krishna, n.d., para. 2)

Sensorial engagement is currently being recognized also as a part of marketing success, and many brands from food and beverage, to product and retail industries are waking up to the realization, that involving multiple senses in the brand and product experience all combine in the brain to create longer lasting impressions and enhanced experiences (Greenwald, 2016). By targeted sensorial cues of visual image, sound, smell, taste, feel and texture, brands can create subconscious triggers that affect consumers' perception of abstract notions of the

brand and its products and services -such as their values, sophistication or quality (Krishna, 2010).

Recent researches within the food sector also show that the traditional value drivers of taste, price, and convenience have been supplemented by *evolving* value drivers, and so-called *product plus* factors; meaning that when making their food choices, people are increasingly basing their decisions on factors such as health and wellness, social impact, specific ingredients, how the product was made, where it was made, the values of the manufacturer and retailer, and the *experience*: including brand interaction and engagement spanning pre, during and post-purchase (The Global Dairy Sector - Trends And Opportunities, 2017). According to studies, especially the younger generations seek and spend on services and experiences more than ever (Ewen, 2017). Research therefore suggests that even the food companies must be able to harness more holistic approach, meaning paying attention to all aspects of food production; including communication, and general brand experience.



Design has long been a fundamental part of how we consume food: the packaging we eat from, and the spaces we eat in have all been designed (Wist, 2015). But in the past years an increased amount of companies have started to show an interest towards the concept of multisensory design, as it is thought no longer to be enough for brands to just create logos, packaging, and websites, but instead to give a holistic brand experience that speaks to all of the senses (Brand Trends – Multisensory Experiences, 2015). "Through a creative, collaborative approach, designers can reveal ideas, solutions, and narratives behind our daily eating experiences in a meaningful way" (Wist, 2015, para. 8). Designers can help food companies to communicate and engage by creating space for storytelling between the producer and the consumer.

## On sensoriality

Humans have three types of memory: Long term, short term and sensory memory, the latter being made up of the traditional five senses of sight, sound, smell, touch and taste (Matheny, 2016). “Senses serve as media that give rise to perceived sensations, which then act as stimuli for emotions” (Karana & van Kesteren, 2013, p. 6).

Senses can also generally be divided into higher and lower senses; higher senses of sight and hearing are often seen as more rational and logical, as opposed to the lower senses of taste, touch and smell that are considered to be much more emotional of our senses (Youssef & Spence, 2011). This division may be an implication of the fact that taste, touch and smell are processed in the part of the brain that is closely connected to the limbic system, which is considered as the centre for emotion and memory (Norman, 2004).

### From senses to memories

Some professionals within neuroscience, psychology and design have also referred to the lower senses of taste, touch and smell as the “forgotten” senses, as the modern world has been largely focusing on the stimulation of the senses of sight and hearing (Spence, 2015). The use of digital media for instance, heightens only our visual perception and hearing, while lower senses are being disregarded.

Sight and hearing are the most effective ways to attract attention and thus easily accessible channels for communication, but their impact on us can sometimes be relatively short lived. Neuroscientists have discovered that different senses carry different levels of recall: the sense of sight has the lowest of 100 milliseconds, sound 3-4 seconds, smell and taste having the longest 5 seconds (Matheny, 2016). But through whichever sense we perceive something that we have an emotional response to, will help our brain to extend the memory of it (Matheny, 2016).

## Sensation vs. Perception

Sensation and perception are the two stages of processing of the senses. Sensation is the stimulus of a sensory organ, and perception is the *awareness* or understanding of that sensation i.e. sensory information. We generally sense first and perceive after –but not all sensations are perceived, as some of them may affect us unconsciously. (Krishna, 2011)

### Sight and colour

*Sight* is a predominant human sense; meaning it is the most responsive to the environment (Gobe, 2009). Sight is also the most utilized sense in our culture even though of all the senses, the attention of it is the most challenging to sustain (Lindström, 2005; Cruz, 2017). It often functions as a starting point for other senses by preparing or setting expectations for the encounter; for instance even when we sense texture, the sense of sight acts prior to touch (Choi, 2013), or when something looks rotten, we expect it to taste and smell bad. Shapes and colours are the first ones to be picked up by sight (Wellesley College, 2013), thus vision plays a significant role also in marketing. There are several factors that affect brands through sight such as logo, products, and colour (Gobe, 2009).

*Colours* have the capacity of conveying information without words or dialogue. The associations we make with different colours may activate thoughts and memories, and impact our perception both consciously and subconsciously (Gobe, 2009). They can be used to highlight attributes in design, to express or suggest emotions or value, or to set the mood; Colours should therefore be considered as a vital tool for communication and chosen with care, as they can carry a lot of meaning (Gobe, 2009).

Sight and colour together also impact our experiences with food. For instance, if something is perceived as red without giving the context of shape or knowing the situation (whether it is a starter or a dessert), we could build expectation for the food to taste either sweet, or spicy. According to Charles Spence, a professor of experimental psychology at Oxford University, the colours we see as we prepare ourselves to eat can even be used to affect our experience of flavour. Spence has found



that “a strawberry-flavoured mousse tastes ten per cent sweeter when served from a white container rather than a black one; that coffee tastes nearly twice as intense but only two-thirds as sweet when it is drunk from a white mug rather than a clear glass one” (Twilley, 2015, para. 7).

### **Smell, taste, touch, and the complexity of flavour**

*Smell* is considered to be the most primal and ancient of all the senses (Herz, 2007). It has not only the longest recall, but according to research most of our emotions are generated by the sense of smell, thus making it the strongest inducer of memories (Lindström, 2005; Verbeek, 2016). It seems that designers, marketers and companies are growingly starting to see the sense of smell as an asset, and believe in the benefits of conscious applications of scents. Scents have the ability to evoke connections, create mood states, and function as a signifier (Lindström, 2005).

As our oral and nasal cavities are directly connected (Richardson, 2015), it is no wonder that the sense of smell impacts our sense of taste. “Scientists have long claimed that much of what is perceived as flavour is actually filtered through the olfactory receptors, with taste buds playing a much smaller role”, meaning that the sense of smell significantly contributes to our perception of flavour (Twilley, 2015, para. 5). Due to smell’s contribution we are not only able to detect nuances in what we taste on top of the five basic tastes of salty, sweet, bitter, sour, and umami; but also therefore food has the potential to evoke memories and emotions (Richardson, 2015).

*Touch* is the first sense humans develop in the womb, and the last one to disappear, as we get old (Krishna, 2012). Various researches into the role of touch highlight the importance of this sensation. The sociological importance of touch aside, touching and feeling materials, surfaces, and textures seem to affect us too. Some studies have even found a link between materials and emotions: different textures may have the potential to elicit either positive or negative emotions in us through their physical and sensorial properties (Karana & van Kesteren, 2013). Nevertheless it has started to be widely acknowledged that textures have the capacity of conveying information and creating

meaning, to which we respond either consciously, or unconsciously (Spence et al., 2013).

Touch may often be considered as stimulation coming from the outside as we interact with the world around us, but we use it internally as well. We touch food as we prepare it and eat it not only with our hands, but also with our mouth. Through *oral-somatosensation*, or ‘mouthfeel’ we are capable of detecting an array of textural, but also chemical sensations such as spice, heat, viscosity, and cooling (Choi, 2013). Oral-somatosensation is also another important contributor to the perception of flavour.

*Flavour* is a complex sensation produced by many different senses such as taste, smell, texture, mouthfeel, sight and colour, and can be thus be considered as one of the most multisensory of our daily experiences (Spence, 2015).



*Fig 1. Perfumed paper fans  
by Atelier Oi ^*

*Fig 2. Rocking horses made  
from Icelandic horsehide;  
paired with scents matching  
the colours by Studio Trippin ^*

*Fig 3. Travel cakes by Emilie  
Baltz >*



*Fig 4. Memory foam jacket  
by Nadine Goebfert ^^*

*Fig 5. Rocking horses by  
Studio Trippin ^*

*Fig 6. Contatto eating experi-  
ence by Giulia Soldatti >*



## Synesthetics and the Cross-modal correspondence

Multisensory design is often primarily considered to refer to an experience that stimulates each individual sensory channel separately (Haverkamp, 2012), indicating that we perceive a product or design in phases: firstly through its visual properties, then tactile properties, followed by possible olfactory and/or gustatory properties, thus the term does not automatically refer to situations when sensory data is received simultaneously through multiple senses, or give consideration on how the senses may impact each other.

This may be due to the fact that the majority of research into human sensory perception has focused on understanding how each sense operates in isolation (Spence & Ngo, 2012). However, contemporary psychological and neuroscientific research has been focusing on humans' capability of making *cross-sensory* connections (Haverkamp, 2012), meaning that two or more senses can interact and impact each other: sensation in one sensory channel could activate another without its direct stimulus. These interactions occur naturally in people with a rare neurological condition *synesthesia*. Associating colours with numbers and letters, or taste with shapes, are examples of synesthetic perception. Historically in the context of design, the concept of creating connections between senses was already acknowledged during the Bauhaus era, when Wassily Kandinsky, known to be a synesthete, explored sensory connections in painting and music (Haverkamp, 2012).

It has been studied recently, that non-synesthetes can also experience cross-sensory associations, or *cross-modal correspondences* either spontaneously or intentionally (Spence & Ngo, 2012; Haverkamp 2012.). However, in contrast to genuine synesthesia, cross-modality is intuitive and dependent on the context. Some cross-modal associations can be universal, but they can also be subjective or culture related, as our perception is influenced by the preconceptions we obtain over the course of life (Haverkamp 2012).

Currently a lot of multisensory design sets out to deal with various senses separately, rather than exploring the possibilities of cross-sensory connections. Synesthetics as a methodology of multisensory design comprises all possible connections between the five senses, and these connections are referred to as cross-modal correspondences. (Haverkamp, 2012)

## Shapes of food

It has been studied that people can associate shapes, colours and forms to what they eat (Spence & Ngo, 2012). Charles Spence runs the Cross-modal Research Lab at Oxford University, which studies the ways our brains receive and implement information given through our senses, with a particular focus on cross-modal correspondences. Him and other academics have looked at various cross-modal interactions such as the effects of sound and taste, colours and taste, and smell and taste, and their discoveries indicate that everything we perceive during eating, like the objects we see and handle, the materials and textures we touch and feel, the sounds and music we hear, the mouth-feel of food, and the perceived flavour, affect us and allow us to form cross-modal associations (Spence et al., 2013).

*Shape symbolism* can be seen as a specific form of cross-modal correspondence, and when studied in the food and beverage context in particular, it refers to the idea that people can associate certain attributes of food to different abstract shapes when asked to describe their eating experiences (Spence & Ngo, 2012). The topic of shape symbolism dates as far as Plato, so for researchers it is not a new phenomenon. (Spence & Ngo, 2012) However, the earlier studies documented by psychologists and linguists in the 1920s have focused largely on the shape symbolism of sound, so the contemporary cross-modal research has found a niche in studying the correspondences that exist between shapes and flavours; flavour encompassing taste, and oral-somatosensory attributes of foodstuffs.

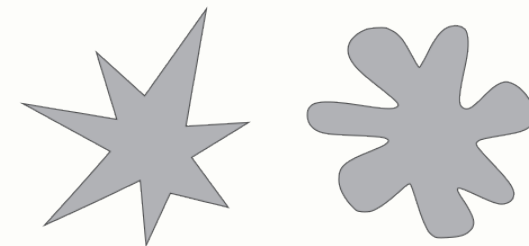


Fig 1. Which of these images looks like Baluma and which one Takete? The origins of shape symbolism date back at 1929 when German psychologist Wolfgang Köhler observed that the majority of people match the 'rounded' sounds of Baluma with the more organic shape, and the 'harsher' sound of Takete with the angular star-like shape instead. (Spence & Ngo, 2012)



Spence and his team have for instance observed that people generally associate sweet flavours to more rounded forms, and bitter flavours to more angular forms. In one other particular study a test group was offered two types of chocolate with mint filling, the only difference being in the consistency of the filling: the other one being more solid and the other one smooth and creamy. The test persons consistently matched the chocolate with creamy filling with organic shapes, and the solid filling with angular shapes instead. According to researchers, this study highlights the impact that oral-somatosensory texture can have on people's perception, and the cross-modal correspondences people make towards foodstuffs (Spence & Ngo, 2012).

Researchers have also observed that cross-modal correspondences and studies in shape associations are rather accessible and easy to conduct, as they seem to provide relatively consistent results already with a small amount of participants. Such experiments typically involve no more than 10 to 20 people; taken that the test people come from the same cultural background (Spence & Ngo, 2012).

Other than providing insights to human cognition, according to Spence (2012), the studies have also demonstrated that the shapes that people are exposed to during food consumption can have an actual effect on their responses towards foodstuffs. This is why "such shape symbolic associations could be, and in some cases already are being, incorporated into the labeling and/or packaging of food and beverage products in order to subconsciously set up specific sensory expectations in the minds of consumers. -- Although such non-verbal signals (for example, abstract forms) normally go unnoticed by the consumer's conscious mind, that does not necessarily mean that such cues are not picked-up and utilized by the unconscious mind" (Spence & Ngo, 2012, para. 1, 5).

Setting up sensory expectations and responding to them accordingly can result in more positive sensorial feedback (Spence & Ngo, 2012), and thus it may partially help in the attempts of providing holistic experiences for people -whether them being encounters with a piece of art, design, a brand, or a service. Academics believe that the shape symbolism could be seen as a benefit especially in the global marketplace, as it could have the potential of crossing language borders as a non-verbal signifier; although more research is needed on under-

standing of what shape symbolic and other cross-modal associations are universal, and which ones are more culture specific (Spence & Ngo, 2012).

Regardless of whether there will, or will not be real benefits from the use of shape symbolic associations in order for any commercial or corporate party to capitalize on them, it seems that in the recent years there has been growing academic research studying cross-modal correspondences in the experience of eating, with a particular focus on oral-somatosensation and shape symbolism. So far chefs, designers and artist have been in the frontier of exploiting these findings in different creative ways. (Spence et al., 2013)

### Senses and emotion in branding

In past years many academics and experts have come to acknowledge that senses and the way they interact fundamentally impact our attitudes on how we gravitate towards things around us. Martin Lindström, an expert specialized in sensory branding, believes that in order to build a strong brand, companies need to be aware of the inner processes of customers and create an understanding of how these processes are sparked by different senses (2005).

What is thought to be essential is to build an *emotional atmosphere* that would in return help provide a memorable experience of the brand to the customer (Krishna, 2012); and as our bodies and brains respond to everything around us, this could be achieved by integrating senses as part of the process. According to Norman, senses play a big part in design on the subconscious level, and that is why focusing on sensorial enhancements can be beneficial (2004). Senses inform us consciously and unconsciously, having the potential to give us either discomfort or confirmation in our encounters, affecting the experience and our attitude towards a possible re-encounter.

Aradhna Krishna, an academic and one of the leading experts in sensory marketing, says that brand experience these days should be thought of as sensations, feelings, perceptions, and behavioral responses evoked by senses (2012). As established earlier, senses are linked to memories, emotions, and feelings, and emotions again impact our

decision-making (Rodriguez, Hultén, & Brito, 2011; Norman, 2004). Furthermore, the more multisensorial the stimulus i.e. the more senses that are involved during the encounter, the more holistic and memorable the overall experience becomes.

## **Case study: Valio and Finlandia**

In my case study I was set out to study two brands through a multisensory approach; Valio, the biggest Finnish dairy company in the domestic market, and Finlandia: Valio's US based branch, through a multisensory approach. Commissioned by Valio, the sole aim is to introduce the company to the concept of sensorial design, and to demonstrate how Valio and Finlandia could be developed further in this area. The areas of particular interest for the company included colour and material design, and understanding the impacts of senses. Valio is also interested in the prospect of introducing 'fresh products' to the US market, so another focal point for the study is to explore how to move Valio's and Finlandia's identities closer together, so that they could be internationally recognized as being under the same brand umbrella, as now their communication is visually very different. Moreover, cultural specific attitudes and preferences should in this case be taken into consideration in the final design.

Domestically Valio's product range encompasses almost all known dairy products, but in this case study however, due to the US possibility Valio's concept has been narrowed down to include only the so-called 'fresh snack products', including different yoghurts, quarks, and drinkables, whereas Finlandia's concept will include cheeses and butter.

### **The story of Valio**

Valio is the biggest Finnish dairy company in the domestic market, founded in 1905 by the farmers. Valio takes pride in still being co-owned by the framers, and in the hundred years of tradition and experience they have in the Finnish dairy industry. One of the company's focal points is on transparency and sustainable farming; the ethos

being that "a happy cow simply produces better milk". All newborn calves are given names -which sums up the key values that the company is aiming to convey: to be more responsible, safe, and care for the wellbeing of customers, producers and animals alike.

Innovation is said to be the heart of the company, as since the establishment of the first Valio laboratory in 1916, the company has won awards with their expertise and product development. Evoking ideas and mental images of the Northern nature are thought to be the company's competitive edge especially in the international market. (Valio, a dairy co-operative owned by farmers, n.d.)

### **The story of Finlandia**

Valio has a long history of importing and selling cheese and butter in the US under the name of Finlandia. Finlandia started as a business in the 1950s, selling cheese to New York-area delis' before expanding into supermarkets, delis' and cheese shops throughout the Northeast of America. Finlandia cheeses and butter are considered as premium products, evoking ideas of heritage and craftsmanship, and they possess a long skilled tradition in cheese and butter making. Their products are made from the "purest milk in the world", with nothing artificial, nor added hormones. Finlandia seeks to convey ideas of happy animals and the purity of the Finnish air and nature. (Finlandia – a history of great taste, n.d.)

### **Objectives**

Through meetings and conversations with Valio's Brand and Marketing Director Hanna Hiekkamies, International Marketing Director Anna-Mari Lammi, and Consumer Insight Manager Kevin Deegan, I outlined main objectives for the project. The starting point was to study Valio and Finlandia separately as they currently exist: To find out what ideas, feelings, and emotions engender firstly through their brand stories and secondly through their visual communication; including logo, colour palette, shapes, materials, and textures. The aim is to discover how well Valio and Finlandia communicate: How are they perceived on the market?

I seek to develop Valio's and Finlandia's brand identities utilizing sensorial design methods; incorporating colours, scents, materials, textures and other sensorial attributes as tools for communication. The goal is to reflect the brand stories and values in a coherent and contemporary way domestically but especially in the US market. Valio's identity will be built on fresh products, aiming to evoke ideas of innovation and wellbeing, whereas Finlandia's identity will be built on cheeses and butter, which are thought of as more rooted in tradition and craftsmanship.

## Part 2

### Design research and insights

#### The associations of Valio and Finlandia

I started the research process by making moodboards of Valio and Finlandia, first associating images, concepts, and colours to each brand based on the mental images they evoke through their brand stories and mission excluding anything visual.

After this I studied both brands focusing solely on their visual branding, including logo, websites, products and their colour scheme, and made moodboards presenting the associations they engendered in me. Some results could be said to be quite upfront, but they managed to make an impact and were nevertheless received well by Valio.

#### Finlandia moodboard 1.

Based on its brand message: the story, mission and values, Finlandia evokes ideas of Finnish heritage, which can often easily be linked with nature and cottage life: Such as deep forests, lakes, and the sea. Muted dark natural colours ranging from the green of the pine trees to charcoal black, with a hint of orange and red of the midsummer sunset and the fire of the sauna stove. Aged and rough textures of wood, stones, and copper, and the delicacy of clear water and glass, the smells of burning, smoke, and forest. Many contrasting elements and emotions are at play, from the serenity that arises from solitude and observing

nature, to force and strength of wood chopping, and to warmth and lassitude generated by sauna.

#### Finlandia moodboard 2.

Excluding the brand message and focusing on the visual presentation, such as logo and product packaging, Finlandia's associations change rather explicitly. The most salient attributes are the logo consisting of a lion head, and the name 'Finlandia' spelled on top in a font that generates ideas of 'Finlandia Vodka' in its resemblance. The positioning of the lion head and the name altogether provoke ideas of heraldry, as well as Finnish Ice Hockey team's logo, but the colouring seems to be the same as in the flag of Russia.

The most distinguishable colours are red, blue, golden yellow, and green, which again as a group can evoke connotations of mixed concepts such as communism, imperialism, or Eastern and Asian influences. Together the colour palette, and the angular shapes and sharp lines of the logo and product labeling, create overall impressions of strength and resilience.



## Finlandia 1.

### Keywords

*Finnish  
quality  
craftsmanship  
natural  
pure  
clean  
rooted  
tradition  
heritage  
strong  
reliable  
premium*



## Finlandia 2.





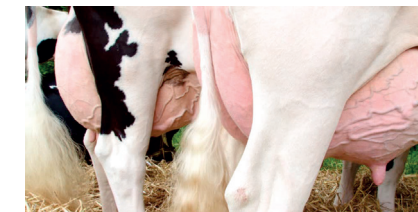
## Valio moodboard 1.

Based on its brand message, Valio highlights its tradition and innovation in milk production, which naturally induces sentiments of the Finnish countryside. Red houses and corrugated metal barns and milking apparatus bring in mind early and active mornings at a farm. Fields covered in a light morning mist, meadows with blooming wild flowers, and cows grazing under the blue skies. Feelings of nostalgia, the smell of birches, warm hay, and a barn. The colour intensities ranging from the pastel hues of creamy white of the fresh milk and softest pink of the cow's udder, to the bright green grass and vivid light blue of the sky.

## Valio moodboard 2.

When focusing on Valio's visual image, the most prominent aspect is that the products severely lack overall coherence. Different product families with individual graphics altogether form a mish mash of typography and colours, contributing to overall confusion about the concept. What is Valio? The graphics range from more old-fashioned labels to updated ones, from all white and delicate pastel colours to hyper energetic reds and greens. The logo's soft rounded outline could resemble a leaf or a pond, creating links to Finnish nature and the countryside.

Regardless of the miscellaneous visual presentation, Valio's overall appearance manages to evoke notions of happiness and positivity. The increased use of white and blue, and the more rounded and organic shapes of the logo, packaging and labeling alike, create an atmosphere of lightness, and modernity, as well as a link to Finland.



### Keywords

Finnish  
wellbeing  
traceability  
clean  
safety  
pure  
natural  
quality  
tradition  
nostalgia  
sustainability  
nordic nature



Valio 2.



Inserting emotions and atmosphere

In summary, Finlandia is altogether visually more coherent, and manages to evoke strong emotions through its branding, although it fails to create clear associations of modern Finland. Valio's product visuals lack in coherence, but it somewhat manages to generate connotations of Finland through its visuals.

The main problem seems to be that there is a dissonance between Valio's and Finlandia's brand messages and how they visually communicate; resulting in a lack of emotion, which again might reflect to the connections that customers are able to establish with the brands. In order for the brands to be able to generate strong positive perceptions, they could become more holistic in their communication. Therefore my main focus will be in extracting and strengthening the emotions and feelings that the brands are intending to evoke, and translate them into different sensorial attributes such as materials, textures, smells, colours and other elements, that will function as a foundation for Valio's and Finlandia's contemporary sensorial identities.

Focus group: Millennials

By outlining who the final design is aimed for helps in developing and targeting the message. According to Kevin Deegan, Valio's Consumer Insight Manager, the current target group for Finlandia in the US is the 'Foodie Mums', which can broadly be defined as women between 25-60 years of age, being the primary grocery shoppers in the family, and willing to pay more for quality. However, the age range seems rather big, considering that a person in the age of 25 is likely to have different priorities and aesthetic preferences compared to a 60 year old, so I felt like the focus could be further specified.

According to studies, a particularly prominent consumer group currently in the US is the 'Millennials'. Millennials are people ranging from 22-36 years of age, and as 80% of them are predicted to have children in the next 10 to 15 years, they could be thought of as the ones raising the next generation of consumers (Canning, 2017). Researches state that millennials' behaviour and preferences are also influencing older generations (Chamlee, 2016).



Millennials are said to gravitate towards healthy, clean and natural food in their choices, and cultural flavours such as Scandinavian are also of their interest (Canning, 2017). Studies show that they prefer environmentally conscious food brands, sustainability and transparency making the top of their criteria: “People want transparency from the brands and companies they choose to support; -- and often this leads to emotional connections in very powerful ways” (Canning, 2017, para. 11).

In terms of communication from food companies, millennials are thought to prefer simplicity, authenticity, personalization (Martino, 2018), and “content that feels less staged and more natural” (Patel, 2017, para. 26).

## Field research and consumer visits

New York City & Boston  
12-18 March 2018

One of the aims of this project was to explore both brands, Valio and Finlandia in the context of the US market, and consequently a research trip to the United States was conducted. It is important to validate and gather ideas and information based on experience and personal observation, and not only rely on pre-existing data, literature and publications.

The research trip consisted of two parts: a field research in New York and private consumer visits in Boston. During the field research I visited multiple grocer’s shops and concept stores in Manhattan. For the consumer visits I got to meet and interview millennials in their homes in Boston and nearby areas. The aim of the trip was to map out the prevailing visual and mental atmospheres, including attitudes, ideals, and values amongst the assigned focus group and generally in the US.

Both the field research and consumer visits were carried out implementing qualitative research methods. Field research is a method of data collection conducted in the real world, meaning observing and interacting in natural settings in order to challenge preconceptions

and hypotheses, but to also get inspired (Saylor Academy, 2012). The observations were documented in the form of notes and photos. Inspiring items and samples were also collected for later analysis.

The consumer visits were pre-appointed and carried out using semi-structured in-depth interview that consisted of predetermined open-ended questions and topics aiming to be covered. This form of interviewing permits more open atmosphere for expression, dialogue, and discussion that may diverge from the planned structure, thus it can provide opportunities for new ways of thinking and approaching the topic at hand (Cohen & Crabtree, 2006). People selected for the interviews met the qualifications of the assigned focus group i.e. the millennials.

Findings generated from these empirical studies will contribute to the conceptualization of the final design.

## New York

It seems that in the recent years many retailers in New York have discovered the potential of sensorial design. Many are incorporating multisensory encounters as a part of their concepts aiming to elevate mundane shopping experiences to more meaningful memories. Thus a part of the field research was to experience multisensorial design in practice by visiting concept stores in Manhattan, that specifically proclaimed enticing customers with experiential and sensorial activities, content, and storytelling. Amongst the visited stores were *Innisfree*, Korean natural cosmetics line, where all the ingredients have been sourced from the island of Jeju; *Perfumerie*, a perfume shop claiming to offer “igniting olfactory experiences”; and *Glossier*, a hyped beauty brand with all pink agenda. I wanted to explore how sensorial design has been implemented in practice, and potentially gain insights and inspiration for the final work.

Another goal was to visit grocery stores in Manhattan. The stores were selected based on research of which grocery brands were perceived as the most popular amongst millennials (Golen, 2015). The objectives were to familiarize with the international food market in general, observe the demographics of the customers, to detect visible food trends, and to study other dairy brands.





## Findings and insights from New York

According to my experience, multisensorial design seems like a common flair in many concept stores around New York. Due to videos, installations, sounds, smells, and sampling: tasting, touching and feeling things, I noticed myself spending more time than average in the shops. I felt happy and curious about things around me, and it lowered my threshold for purchasing. I felt as if I wanted buy a piece or a memory of the experience: a souvenir. After each visit I noticed myself leaving feeling more upbeat. A conclusion could be drawn, that by engaging people emotionally and through different senses in a shop environment, people may end up staying longer. The joint effect of emotional engagement and the prolonged experience again may result into more impulsive purchases. All in all, multisensorial encounters in retail environment make the experiences more engaging and fun.

Local and organic produce, plant based products, and clean and natural food with fewer additives where amongst the food trends observed in the grocery shops. From dairy companies, it seems that Icelandic Siggí's and Norr Skeyr, and American Chobani are amongst the most popular brands.

## Boston

The main goal for Boston was to connect with the US millennial consumers. Interviews were executed over the course of three days and took place in Boston and in the surrounding areas.

Sessions included an interview at home, followed by a visit to a local grocery store of interviewee's choice. Sessions were arranged with families and individuals who met the criteria: They were born between 1980s and the mid-1990s and who considered themselves to have a keen interest in the culture of food. A total of 5 people participated, 3 male and 2 female respondents from four different millennial families: a Latina woman in a relationship with no children, American full-time working dad with a working spouse and three young children, American stay-at-home dad with a career spouse and two young children, and full-time working Latino-Irish couple with two small children.

*Glossier advertises itself as "people-powered beauty ecosystem". Their presence is as vivid and active online as in real life, proclaiming that the "customer is the beauty editor": inviting customers to contribute to their Instagram stories –a medium in which millennials are highly active. The store itself is an all-pink room in the third floor of a building, only accessed by an elevator that is guarded by a female bouncer. Once the elevator doors open, customers are greeted with up-beat music, custom scent, flower arrangements, and multiple stations where they can sample the products.*



Interviews were planned before hand aiming to cover predetermined subject areas. Even though questions and visual material were prepared, the aim was to encourage respondents to express themselves freely and eventually engage them in a flowing dialogue.

The volunteers were not paid for participating. The sessions took approximately two hours per participant, all of them displaying a positive attitude towards the study. The encounters were recorded in notes and photos, and the data was interpreted afterwards.

### Objectives

Through the in-depth interviews and observations my aim was to create an overall understanding of the respondents' lifestyles, attitudes and outlooks: what influences them, their food choices, and their behaviour as a consumer. What do they know about Finland or the Nordics, what are the associations, and how are they perceived? What their associations on Valio and Finlandia are?

I am seeking to validate my hypothesis that Valio and Finlandia both convey attributes that millennials would potentially find appealing in a brand such as transparency, sustainability and wellbeing, but these ideals fail to come across through their visual identities. Another hypothesis is that Finland and the Nordics in general have a good echo amongst millennials in the US, and manage to evoke mainly positive associations.

I am hoping that by finding answers to the aforementioned will partially help me designate the final design. My aim is to create sensorial identities for Valio and Finlandia that evoke ideas and associations of Finland, resulting into a more holistic image and positive perceptions of the brands.

### Interviews

Interviews were divided into themes, which were aiming to cover the following: insights into the respondents' lifestyles, food trends in the US, respondents' associations of the Nordics, respondents' ability to read into semiotics of logos, Valio's and Finlandia's brand assessments, colour associations, and the level of design respondents' find relatable. However, in this section I am opening up only the parts of

the interview that I consider meeting my objectives and having the most significance in terms of the final work. Full detailed interview and remarks can be found in appendix.



The interviews began with the interviewees speaking freely about themselves, their lifestyle, values, and how these are reflected in the choices they make with food and eating. Some common conclusions could be drawn: All respondents appreciate authenticity, tradition and heritage: the story and the origins of the product are seen important. Being approachable and relatable is valued over being 'cool'. Most respondents also raised voices for sustainability, growing health consciousness and organic produce.

The interview moved on to discussion about respondents' associations of Finland and the Nordics in general, followed by a moodboard of images and words from which they could pick the ones they related the most. All respondents strongly associate words such as outdoorsy, healthy, simple, and clean to the Nordics. They also reported mental landscapes of nature and architecture prior to showing images. Nordic lifestyle and culture seem to be appreciated, and Nordic products are seen as good quality and trustworthy, but occasionally even over the top in design. All respondents say they perceive most images and words in the moodboard as Nordic or Finnish, meaning they have a good general understanding of the culture and it's aesthetics. They even point out certain subtleties in material and texture as familiar to the Nordics.



Nico, 25: “Nordics is a source for inspiration for companies in the US. It’s considered a luxury for traveling. Clean aesthetics, good design, a lot of wood, and architecture. I view Nordics as calming, pleasing, and organized -but it’s not my personal style though. There’s a healthy food culture, and not as seasoned. It’s seen exotic –tempting in terms of origins and quality.”

Adam, 35: “Nordic cultures are more easygoing towards daily life. They seem carefree and outdoorsy, and are not as economically driven people. There’s attention to packaging: appealing, clean, and natural looking designs. Nordic products are seen as good for you: they take care of making a product. The produce is healthier because animals are treated better. American dairy products have more sugar in them, but I actually prefer it sweeter too.”

Betsy, 34 & Sandy, 35: “Blue water, white people, Vikings, and a lot of land and nature. Outdoorsy. People make everything themselves, which is admirable. It’s a little bit different –which is a positive connotation. Everything from there looks fancy. Clean look, simplicity, but slightly intimidating; looks expensive, but it’s actually not –or maybe costs a bit more.”

Tim, 31: “Europeans are more forward minded, and there’s less vanity. Cleaner, larger, cities mixed with old buildings -but they are more updated and modern. There are mountains, less cars and more biking. Outdoorsy, progressive, clean, and trustworthy come to my mind.”



As the interview proceeded I asked the participants to study Valio's and Finlandia's brand stories. Valio's story is perceived well in overall, but some respondents doubted its genuineness. The tone feels generic at times and not personal enough, which is associated to a bigger company or corporation. Corporations are viewed as a negative thing amongst interviewees. Finlandia's story is seen as being similar to Valio's in many aspects, but some respondents felt it managed to paint more images and being more sensorial: "The second story succeeds in painting more images: green grass, time, tradition, and heritage. Facts are backed up. There is more romance in the words. I read it with more excitement in my head. Sounds more welcoming -although this feels corporate too."

After the brand stories, the respondents familiarized themselves with Valio's and Finlandia's visual content and products through websites and images. Most respondents feel that Valio's identity fails to be coherent, as the visuals and products don't reflect the respondent's perception of the brand story. Respondents prefer products to have a uniform look across a product range so that they can easily connect them to a brand.

As with Finlandia, most respondents seem to think there is an overall coherence to the brand. It seems that the visual identity is at least partially in line with how the respondents perceived the brand through the story. Despite most of the respondents finding the visuals partially outdated, their attitude towards the brand seems overall approbative.

#### **Findings and insights from Boston**

It seems that it is beneficial for companies to imply effortlessness, and being natural and down to earth in their approach, in order to avoid coming across as fake or insincere. Authenticity and tradition are appreciated, and these should be communicated both visually and verbally. Millennials seem to have a trained eye and ear for picking up nuances in communication, so there is no need for forced ideas and concepts. Overly designed or 'cool' visuals are seen as try-hard and can be found unappealing.

#### **Valio's brand story**

Grown from humble beginnings: founded by the farmers, we now have over one hundred years of experience in the Finnish dairy industry. Because we are still owned by the very farmers who produce our milk, it is only natural for us to focus on sustainable farming. A happy cow simply produces better quality milk. Finnish milk has its origins in the untainted countryside and knowledgeable production. In fact, Finland produces the EU's cleanest milk, thanks to having the healthiest cows.

We ensure quality and safety every step of the way to give consumers complete peace of mind. Our dairy products are the sustainable GMO-free choice.

Keywords: Responsible, sustainable, transparency, safety, pure, nature, well-being, farmer-owned, Finnish, tradition, innovation, contemporary

#### **Finlandia's brand story**

Our cheese and butter have been created from the goodness of nature with skill and imagination for more than a century. Our master craftsmen are relentless in the pursuit of taste perfection. Each step celebrates the time-honored tradition of European craftsmanship for which we are famous.

Owned by small Finnish family-owned farms we know that the happier the cow, the better the milk. That's why we treat our cows like family. They are treated to the greenest grass and breathe the pure air of Finland, one of the cleanest countries on Earth.

We are one of the most highly regarded cheese brands and known for producing superior taste and quality. We have earned countless international awards for cheese-making excellence. Discover our legendary taste.

Keywords: Quality, craftsmanship, premium, taste, nature, Finnish, skill, tradition, pure, clean, authentic, legendary



All interviewees perceive the Nordic countries in a positive way relating words such as 'good quality' and 'trustworthy' to them. A conclusion could be made that coming across as 'Nordic' or 'Finnish' could be received well, and it may even be seen as adding perceived value to the brand or product. Respondents also report a good general understanding of the Nordics, meaning there is no need to force an idea of Finland. 'Finnishness' or the concept of 'originating from the Nordics' could instead be implied in a more subtle way through different sensorial cues such as colour, texture, material, and other elements.

According to respondents, Finlandia manages to paint more pictures and be more sensorial and romantic in its story, and is therefore received well. Respondents also highlight the happiness of animals as a positive aspect in both stories. This could mean that emotionally engaging content is found appealing.

According to research, Valio and Finlandia's brand stories and visual identities fail to have a strong correlation: The mental images that the brand stories manage to paint, don't translate well into their visual communication, although Finlandia seems to translate better than Valio. The perception seems to have changed more drastically from positive to negative with those respondents who felt more engaged by the story, before familiarizing with the products and the websites. This might indicate that when the expectations are set and the reality doesn't match consumer's own perception; they experience a stronger sense of disappointment (Spence & Ngo, 2012). A conclusion could be drawn, that when the reality matches with consumer's own preconceptions, they may experience a stronger sense of lenience.

Respondents seem to also prefer recognizable brands, meaning that visual coherence is maintained throughout different mediums and product range. In overall Valio is viewed as more corporate and commercial. Finlandia again is considered more outdated.

## Cross-modal association test

After the research into cross-modal correspondences and the shape symbolism of food, I was intrigued by conducting my own experiments

to see whether or not it would be possible to harness cross-sensory associations of Valio's and Finlandia's products, and whether the results would be anything utilizable in the final design process.

According to Charles Spence and Kim Ngo, people are capable of intuitively matching textures and flavours of foodstuffs with abstract shapes, and that studies into these shape associations are rather easy to conduct as relatively simple setting and small amount of participants could already provide some insight for a hypothesis (2012). Many academics have also noted that consumers tend to prefer those products that match their sensory expectations (Norman 2004; Spence & Ngo, 2012; Haverkamp, 2012); "People define products not only through their direct sensorial properties such as taste and texture, but also their more subconscious associations and symbolic contents may play a role" (Haverkamp, 2012); Therefore studying people's associations could be beneficial and may help to set the right expectations for Valio's and Finlandia's sensorial identities.

In my study I was particularly interested in focusing on the *oral-somatosensation* i.e. mouthfeel. The idea was to explore the shape associations participants make after their oral-somatosensorial experiences with yoghurts and drinkables; and cheeses and butter, and to see whether they differ from each other. In the end I was hoping to be able to have a concept of what mouthfeels of Valio and Finlandia look like, and to find out whether a clear difference could be established between the two.

## Objects, texture, and mouthfeel

Tasting sessions were organized with 11 participants to study two different categories: a) yoghurts and drinkables representing Valio, and b) cheeses and butter representing Finlandia. The products for Valio category were selected based on the research in the US; the picked products would best meet the demands of the current and upcoming market. The products for Finlandia category again are the ones being already sold in the US. The tests were conducted in a studio apartment as individual one-on-one sessions in order to avoid interference from other people. The tests were executed over a course of two weeks, and lasted for one hour including briefing and warming up. The participants were seated so that they couldn't see any product packaging, and all food samples were presented in similar anonymous manner. It

had also been confirmed that the participants posed no strong likes or dislikes towards the foodstuffs presented. The participants were both men and women, ranging from 25-34 in years of age, and from European cultural background: 9 Finnish, 1 British and 1 Italian. Notes of participants' reactions and comments were taken throughout the session.

The test started by asking the participants what *objects* they relate to the process of consuming of the products in each category. This was meant to function partially as a warm up, but there was also a hypothesis that the objects we handle prior to food consumption might have an impact on how we associate food textures with shapes. After this, the participants were asked which *single shape* they would strongly associate with each category. Next phase was the actual tasting test: participants were given food samples from each category separately, and asked to describe the *texture* and *mouthfeel* of the foodstuffs as detailed as possible as they were eating. Immediately after they finished tasting the products from each category, the participants were asked to intuitively visualize their oral-somatosensorial experience by drawing. The drawings were then analyzed together so that the participant could give further insight into what they had been intending to draw, or what was it they wanted to express. Most drawings were abstract shapes and lines varying in roundness and angularity.

### Findings and insights

The three most related objects with yoghurts and drinkables were spoon, bowl, and glass; which could be typically considered as more rounded forms, whereas the three most related objects with cheeses and butter were knife, slicer, and grater; typically considered as sharp and more angular. After this all participants associated a round shape to yoghurts and drinkables, and a rectangular for cheeses and butter prior to actual tasting. The results could indicate that qualities of the objects and packaging we relate to food products and eating experiences may have an impact on our associations even if we are not physically touching them, from which a further conclusion could be drawn that the things we see, touch, and feel during the process of eating, may impact our perception.

When asked to describe the texture and mouthfeel during the taste test, the participants in many cases used words that typically describe

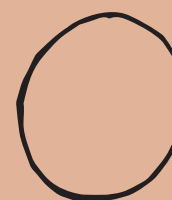
a)

b)

objects



single shape



mouthfeel

- 1) Sour
- 2) Creamy
- 3) Sweet

- 1) Soft
- 2) Rubbery
- 3) Strong

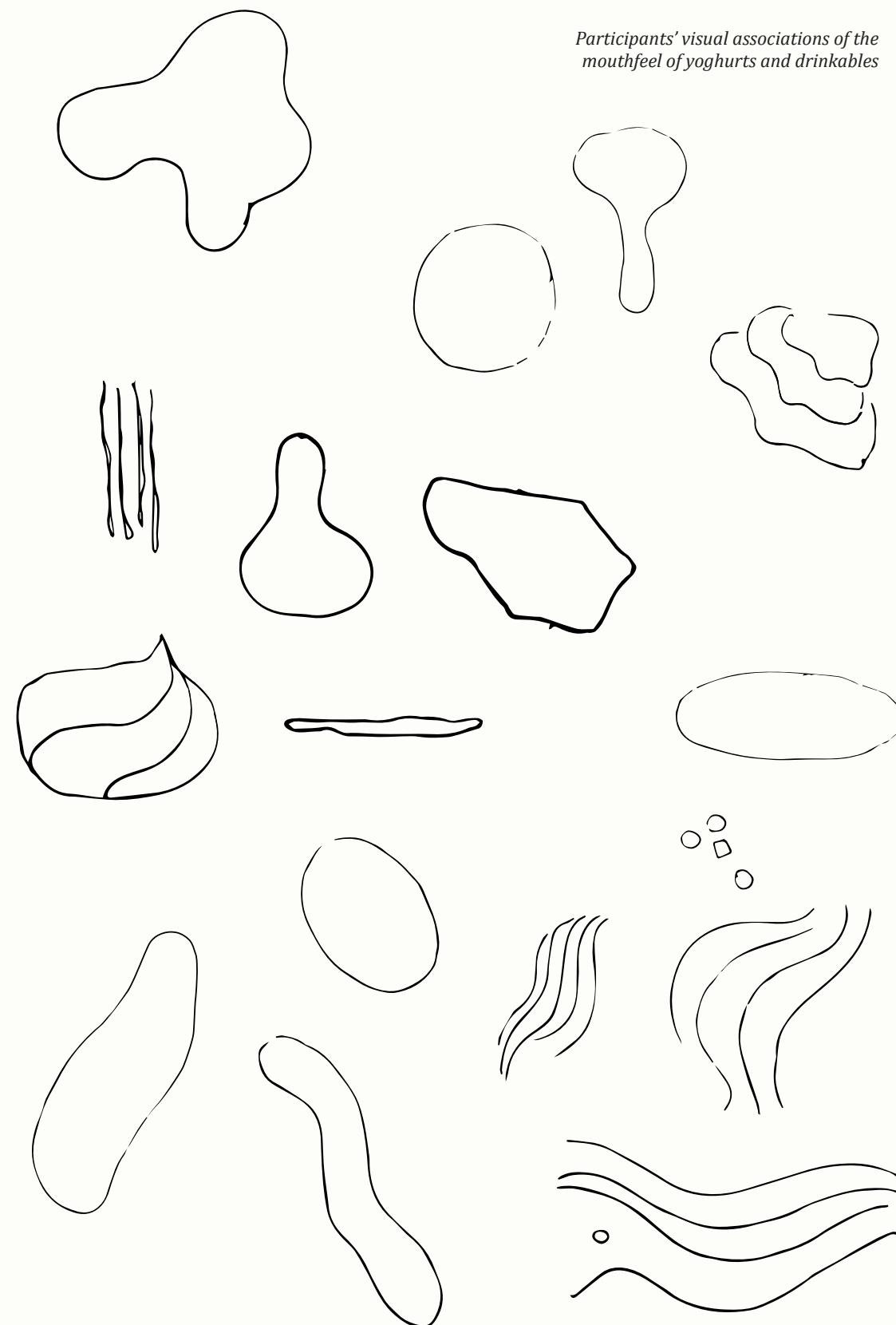
flavour. This was by no means an error, since as established earlier flavour and texture are intertwined. The three most associated words with yoghurts and drinkables were sour, creamy, and sweet; and soft, rubbery, and strong for cheeses and butter; interesting remark being that the participants perceived cheese as ‘rubbery’ only after the samples were changed from slices to cubes, which may indicate that the shape of the foodstuff may have an impact on its perceived textural attributes. Participants also used many interesting expressions and words that are used to describe visual attributes or even sounds, as they were trying to describe the perceived texture of the foodstuffs. Yoghurts and drinkables were perceived such as “a layered cloud”, hilly, pastelly, glossy, “as if you drank pastel colours”, “childhood”; including ambiguous “blub blub blub blub” -sound made by one participant. Cheeses and butter were perceived also as foresty, “yellow based” and “more fun in the summer”.

The final drawings demonstrate that based on their texture and mouthfeel yoghurts and drinkables are further being associated with rounded shapes and soft forms, taking that the single shape associated to them initially prior to the experience with mouthfeel, was already a rounded shape. This is to suggest that attributes such as ‘creamy’ and ‘sweet’ could be regarded as being clearly *rounded* in sensorial communication. This information could be applied in visual, tactile and even olfactory concepts.

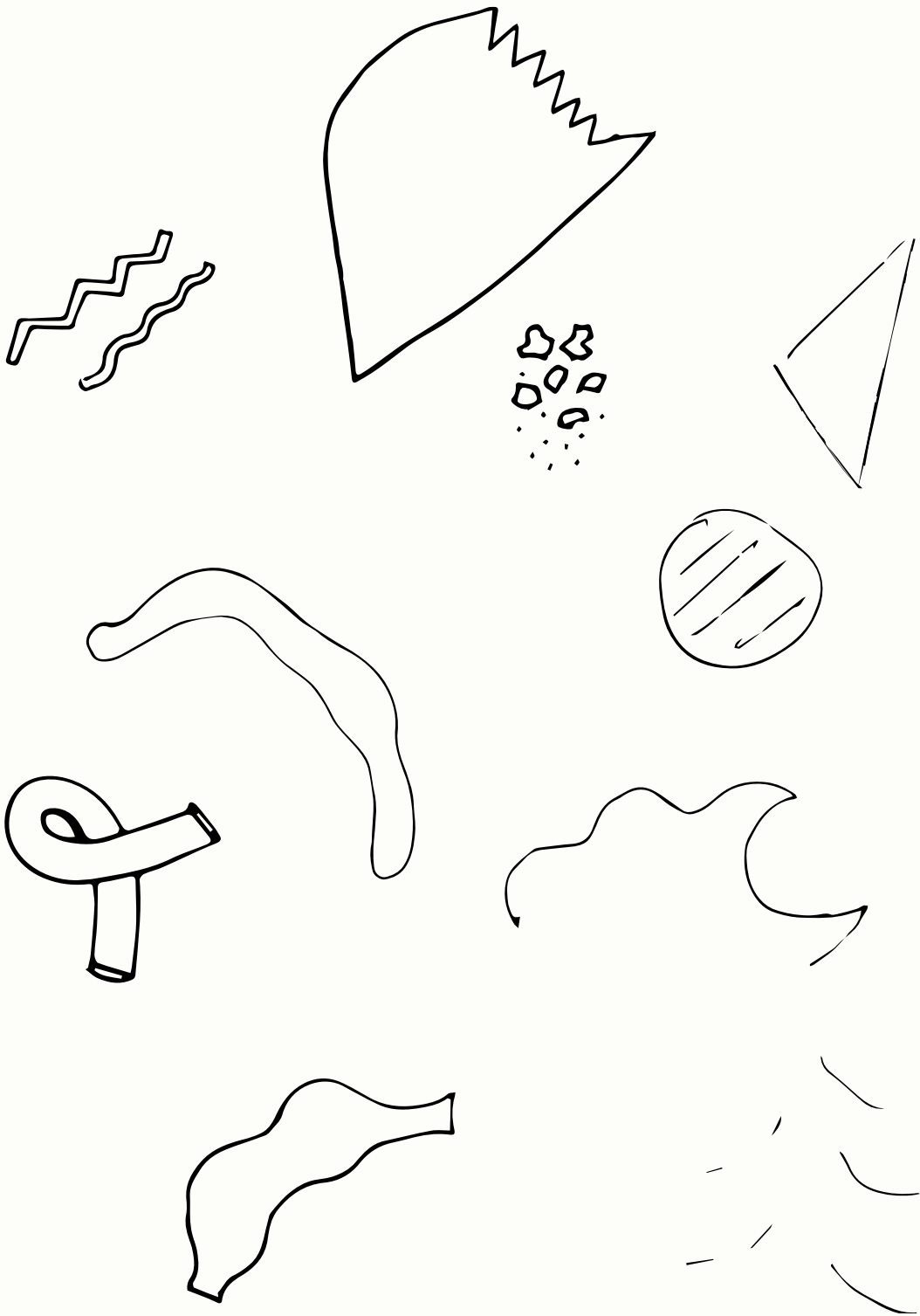
The drawings suggest that the experience with mouthfeel had more influence on the shape associations of cheeses and yoghurts. Participants initially associated a rectangle or an angular shape to aforementioned foodstuffs, but after tasting more rounded and other ambiguous forms emerged as associations from the words such as ‘rubbery’ and ‘strong’. This may indicate that texture of the foodstuffs may impact how we perceive them after tasting as compared to our associations before tasting. The results suggest that yoghurts and drinkables, and cheeses and butter create different associations based on their texture. All in all, a difference was established between the two categories.

Many recent researches have suggested the benefits of setting up sensory expectations for our encounters and experiences. Research into different cross-modal correspondences can help understanding and defining what those expectations might be. Insights generated by this experiment will be utilized in the final work.

*Participants' visual associations of the mouthfeel of yoghurts and drinkables*



Participants' visual associations of  
the mouthfeel of cheeses and butter





## Part 3

### Production and the design process

#### Design philosophy

As a designer I consider myself more as a thinker than a doer. Spending time creating and researching concepts have always interested me more than the process of making. I have come to observe that the threshold for turning ideas and concepts into physical existence is exceptionally high for me; I tend to execute a high level of self-censorship questioning the meaning, and the reasons why something should exist. Thus in many cases my work ends up being conceptual, balancing between art and design.

Innovation and novelty are generally not attributes that I strive for. Eva Zeisel has once said: “Novelty is a concept of commerce, not an aesthetic concept”. In addition to aesthetics, my design would ideally hold an element of discovery to it; share an insight, or communicate an interesting concept whether a new or an old one.

I enter the process of making often with a clear vision to the finest detail and become very particular about the execution. My biggest struggle is to stay open minded leaving space for happy accidents that will allow me to discover and learn during the process. Human mind is only capable of conceiving things within the limits of its own knowledge and understanding, so to an extent I find the accidents and struggle essential for an optimal result. My work tends to be sometimes peculiar, but symmetrical, quite delicate, and polished, although I would like to see myself moving more often away from the perfection and clean geometry towards more ambiguous and organic aesthetics.

I have a particular fondness towards colours and materials, and I tend to vary the materials I work with.

I consider intuition as one of my best and the most reliable assets in the design process. Intuition is often overlooked as something silly, as it is not tangible or within a reach of verbal reasoning. However, my theory is that by creating a holistic understanding of a concept by immersing oneself into the research enables one to make sound decisions based on intuition.

#### Inspiration

I have been curious about multiple practices unable to focus solely on one thing, so seeing designers working across different fields, and works that cross borders of art and design; and the potential of the idea that there is no need to limit myself, inspire me. I currently feel the most intrigued by projects that focus on explorations in colour, form, material, and texture from a human perspective; multisensory experiences, concepts, or objects that suggest ambience or mood thus aiming to tap into our emotions; or entice connections between physical and mental worlds in which senses function as the mediator. Also abstract and still life painting with an emphasis on colour and form inspire me such as Hilma af Klint, Agnes Martin, and Giorgio Morandi.



*Fig 1. Studio Swine's multisensory experience New Spring presents ephemeral materials in an interactive installation: mist filled bubbles disappear on contact with skin, but can be held by wearing special gloves.*



*Fig 3. Wang & Söderström's work balances between real and surreal. Striving to create unexpected experiences, small details make the viewer question what they are seeing and by extension, how do they perceive the world.*

*Fig 4. Giorgio Morandi, still life painting >*

*Fig 5. Victoria Ling, still life photography v*



*Fig 2. Valentina Cameranesi's sculptural vases present curved and complex shapes based on the research into the use of marble in ancient Roman churches and anatomical shapes in classical sculptures.*



## Final pieces

My final work consists of two parts; first part being the *sensorial identities* for Valio and Finlandia. ‘Sensorial identity’ in this context refers to an atmosphere that is suggested to be associated to each brand, and has been designed utilizing the knowledge and inspiration gained during the research phase. The aim is to present updated and coherent concepts for both brands, introducing the direction they could be developed towards in the future in order for them to possibly better meet the expectations of the customers, and to evoke an emotional response. The sensorial identities could be used to set a tone, and function as a reference point for branding in order to assure that the overall atmosphere is maintained throughout all stages of communication.

The second part is a set of artworks inspired by the cross-modal association test. The shape associations of cheese and butter, and the most common words used by the test group to describe the oral-somatosensory experience of the sampled cheeses are interpreted into four colourful pieces altogether representing ‘the mouthfeel of cheese’.

I wanted to produce two outcomes as they serve different purposes: one aims to cover the research objectives set in the beginning of the project together with the client i.e. Valio, and the second one being personal artistic work inspired by the research.

### Curiosity boards of Valio and Finlandia

The medium I wanted to use to communicate Valio’s and Finlandia’s identities was clear early on. Colour and material board is a design tool that is used to show how selected colours and materials work together. The board also allows creating an understanding of the volume of different colours in relation to each other. I used the idea of colour and material board as a starting point incorporating more elements to it. *Curiosity board* is a term I came across with during research indicating that the contents can include a repertoire of things; for me it meant anything from visual and tactile to more intangible cues. In

comparison to a concept board, which is regarded as a representation of an idea for a product or a service, curiosity board should be regarded as more metaphoric and atmospheric in its nature, as the displayed elements are not all necessarily meant to be incorporated into the final concept.

Valio and Finlandia are presented on separate boards through colours, objects and elements to be associated with each brand. The boards can be perceived through the senses of sight, touch and smell, thus aiming towards conveying a more consolidated and holistic image of the brand identities. The contents of the boards have been selected and developed based on all the previous research conducted. The boards are accompanied with an index, mapping and explaining the contents of each board. This work could be seen to serve as a design tool offering some future perspectives for Valio and Finlandia to draw upon.

### Constructing sensorial identities

I started building Valio’s and Finlandia’s identities by collecting all the findings; remarks and associations made with each brand in different stages of research into lists of keywords and ideas.

	Valio	Finlandia
Aim	To reflect Finnish tradition and innovation in a modern way	To reflect Finnish tradition and heritage in a contemporary way
Findings from Boston	+ Looks Finnish, happy animals - Not coherent, corporate, commercial	+ Coherent, conveys heritage - Does not reflect Finland, outdated, gets mixed with vodka
Cross-modal association test	<b>Objects:</b> Spoon, bowl, glass, cow, udder, pasture. <b>Mouthfeel:</b> Sour, creamy, sweet, smooth, thick, layered cloud, pastelly, childhood	<b>Objects:</b> Knife, slicer, grater <b>Mouthfeel:</b> Soft, rubbery, strong, sharp, tangy, savoury, aged, smoky, juniper like, crystalline, granular, foresty, “yellow based”, “more fun in the summer”
Shape associations	<b>Single shape:</b> Rounded <b>After tasting:</b> Rounded, soft, organic	<b>Single shape:</b> Rectangular, angular <b>After tasting:</b> Angular, organic, ambiguous

+ General brand virtues based on Boston interviews: Authentic, traditional, natural, down-to-earth, Nordic associations, not too ‘cool’



Valio's list naturally evokes mental connections to countryside through its brand story, and associations created by objects and foodstuff such as pasture, layered cloud, happy animals, cow, and udder. The associated objects further engender ideas of morning time as spoon, bowl and glass are related to breakfast rituals. Finlandia again generates ideas of forest and potentially a cottage environment as the brand story and the objects and foodstuffs triggered associations of tradition, heritage, foresty flavours, juniper, strong, sharp, aged, smoky, knife, and 'more fun in the summer'.

One objective for the project was to find a connection between Valio and Finlandia. As they are visually significantly different, I thought this could be best achieved by creating a narrative that brings the brands closer together on a conceptual level. Since Valio evokes ideas of morning and the countryside, and Finlandia potentially a cottage and a forest, I started to work with the idea that they could be thought of as being two ends of a day; as parts of one cycle. Thus Finlandia would represent the evening; as much as cheeses and butter can be seen as being part of breakfast, they fit into a romantic idea of an evening too. It is also important to note that I naturally associate summer being the time of the year, since it will have a crucial impact on many other elements.

I started to build a colour palette for each brand drawing inspiration from these two scenes, thus the colour palettes would naturally link them to chosen environments. The time of the day also had an impact on the tones of the colours: Valio's morning colours are more vivid, bright and saturated, whereas Finlandia's evening colours are deeper, broken and muted.

I continued by analyzing the brands through the settings of countryside and forest and the keywords from the research, and started to incorporate visual, tactile and olfactory elements to the boards based on them. The keywords for Valio's visual, tactile and olfactory elements were: rounded, soft, smooth, sweet, pastely, spoon, bowl and glass, and the additional keywords inspired by the countryside being: sunrise, barn, field, meadow, wild flowers, and birch. The main ideas and emotions that Valio's curiosity board aims to convey are: Health, freshness, happiness, joy, energy, playfulness, trustworthy and innovation; ultimately aiming at being perceived as less corporate, less commercial, more coherent, and to reflect Finnish tradition and innovation in a contemporary way.

The inspiration for Finlandia's visual, tactile and olfactory elements picked from the research were: Angular, organic, strong, sharp, aged, smoky, savoury, and knife; and the additional keywords inspired by the forest and cottage were: Pine tree, sunset, firewood, sauna, heirloom, and nature. The main ideas and emotions that Finlandia's identity aims to convey are: Tradition, solitude, one-with-nature, equilibrium, tranquility, craftsmanship, and heritage, aiming at creating associations to Finland, and not seem outdated.

## Colours of Finlandia



### Keywords

*forest  
nature  
pine  
summer  
cottage*

*Finland  
tradition  
heritage  
heirloom  
craftsmanship  
contemporary*

*evening  
sunset  
muted  
cheese & butter*

*solitude  
equilibrium  
tranquility  
one-with-nature  
sustainable*



## Colours of Valio



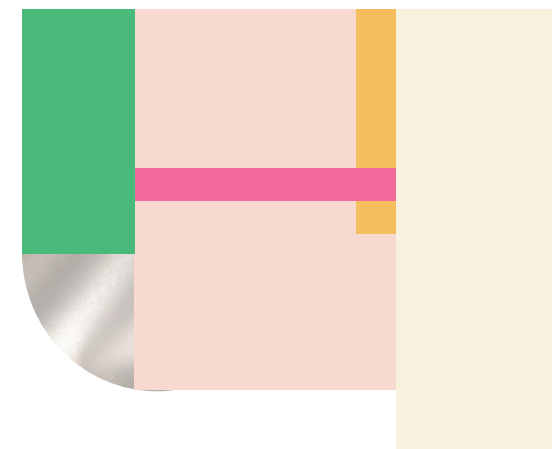
### Keywords

*countryside  
nature  
birch  
summer  
farm  
meadow*

*Finland  
tradition  
modern  
innovation*

*morning  
sunrise  
fresh  
bright  
saturated  
yoghurts &  
drinkables*

*joy  
playfulness  
energy  
healthy  
trustworthy*



# Finlandia

## Summer evening at the cottage



*Scents of cedar wood; leather, wood and smoke;  
subtle dark green accords; rosemary; chamomile  
tea and coffee ^*



*< Textures of bark, aged copper, wooden  
handle, and waxed candle ^*

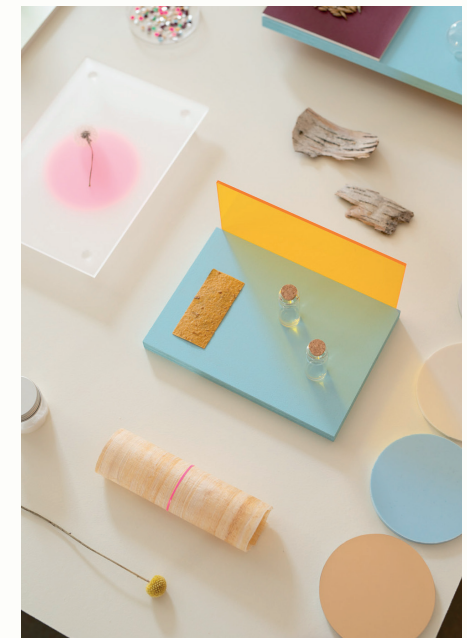


# Valio

## Summer morning in the countryside



*Pops of bright colour, rounded and symmetrical shapes, multiplicity of things, and feel of lightness and air are important elements in evoking feelings of joy. (Fetell Lee, 2018)*



*^ Scents of Caramel, Joy and Meadow  
< Three touch objects with smooth, soft, and corrugated surfaces*

## Mouthfeel of cheese

‘Tangy’, ‘Rubbery’, and ‘Soft, sharp, strong’ together form a family of silicone artworks inspired by the cross-sensory connections of eating cheese. I wanted to reflect on Finlandia’s study results further in the final work, as the abstract drawings representing the oral-somatosensory experience of cheese were intriguing. The ambiguous shapes drawn by the participants were discussed together in order to gain more insight into what the images were aiming to express. Different sensations were analyzed in relation to each other; which ones were considered primary and which secondary; how did the elements compare to each other in size? The aim was not to copy the drawings straight into three-dimensional form, but rather to communicate the sensation as reported with help from the images. The result is thus my interpretation of the reported associations and sensations. The final works will be accompanied with a cheese plate during viewing, so that the viewer can experience and observe the mouthfeel of cheese simultaneously through their oral-somatosensory feel and vision.

## Materials

I chose to make the pieces with *silicone*, as the texture and feel of hardened silicone may carry a resemblance to the surface of the mouth when examined closely: the texture feeling resilient, and the surface looking glossy and bubbly. Furthermore the process of working with it carries a resemblance to that of cheese making: a viscous fluid is casted into a mold, turning solid over time.

Parts of the work were made with *jesmonite*, a composite material that is casted. Hardened jesmonite can be worked afterwards and sanded into a very fine and smooth surface. It is heavier than silicone; so all the supportive elements were therefore made with jesmonite.

## Designing and making

I chose to reflect on the flavours and textures of tangy, rubbery, and soft, sharp, and strong, the three latter ones being incorporated into one single piece as the words were often used together to describe a

certain kind of flavour sensation related to one particular cheese. The inspiration for sketching was derived from the drawings and the dialogue with the participants.

Life size cardboard prototypes were constructed after sketching to see how the forms would work in relation to each other and to a space. Some alterations were made after this stage and the decisions the thicknesses of the pieces were also considered at this point. The final forms ended up symmetrical and refined both for silicone and jesmonite pieces, which was due to personal aesthetic preferences. After determining the exact form and thickness, the pieces’ holding capacity were calculated in order to determine the amount of silicone needed for the casting.

After experimenting with silicone I discovered that the glossiness of the mold or material that silicone is casted against is directly transferred to the surface of the casted silicone. I wanted my pieces to be high gloss to carry that inside-of-the-mouth quality to them, so I chose to make molds from high gloss acrylic.

The pieces I was about to cast were the biggest casts done with silicone at school so far, so no one really had a clear understanding of how to mix and handle silicone, and how it would harden in such large quantities. Silicone is an expensive material, so I could only order the exact amount of silicone needed for the pieces: 11 liters of silicone were used for casting altogether. I was learning how to cast big silicone pieces from YouTube and some smaller test piece were made, but in the end I could just hope for the best.

I felt it would be natural to use the colours from Finlandia’s colour palette, and played around with different combinations for the pieces. I ended up adopting neon yellow as part of the artwork’s colour scheme, bringing an element of ‘pop’ and playfulness.

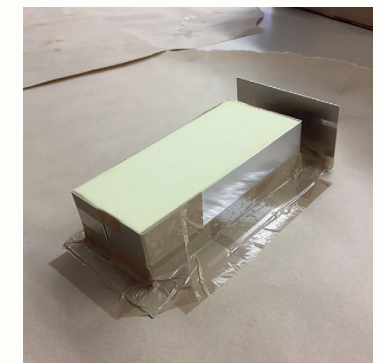
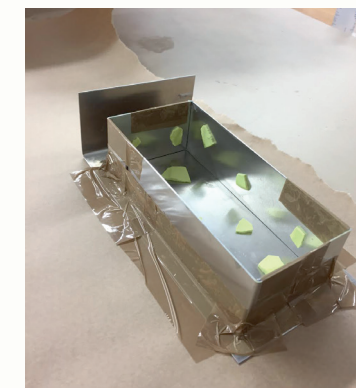
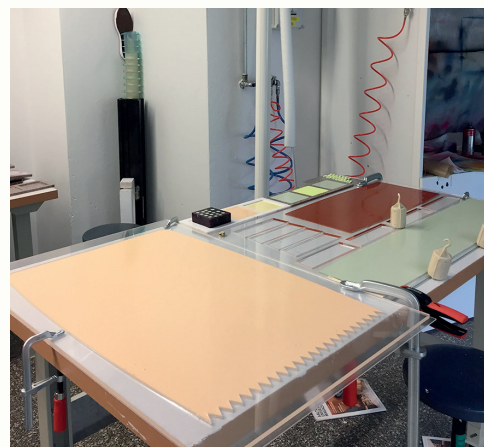
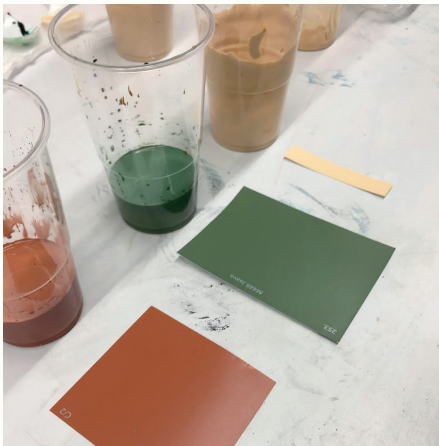
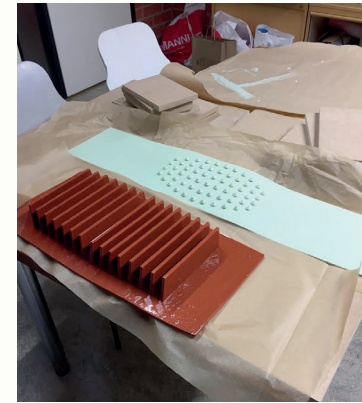
During the process of making colour samples, I learned that the colour repetition and accuracy was far better with silicone than jesmonite: Mixing the right shades with silicone was easy and there was hardly any change in colour before and after hardening, whereas with jesmonite finding the right shade took much longer. There was also a big difference before and after hardening: The shades tended to get more muted, which had to be foreseen when mixing. It was also practically



impossible to get some shades to repeat as vibrant on jesmonite as they did on silicone or on the paper samples. All in all silicone is a great material for producing colour samples, as the colour intended is relatively easy to reach, and different surfaces from high gloss to matt can be also produced.

Mixing is essential in the process of casting silicone for it to harden right: the desired colour shade is first mixed in the base, which is then mixed with the catalyst, the ratio being 10:1; meaning 10 parts of silicone base plus 1 part of catalyst. Ensuring that silicone is mixed thoroughly is more difficult in large quantities, so I decided to make smaller patches and combine them into one before pouring it into a mold.

The expectation was that the hardened silicone sheets would have been resilient enough to support themselves in a bent form, but it turned out that they needed support. Additional metal framework were constructed and painted, and the silicone was laid on top.





# The mouthfeel of cheese

Tangy, Rubbery, and  
Soft, sharp, strong



**Tangy:** The flavour and texture experience of tangy feels like an intensely piercing sweet and sour impression along the sides of the tongue. During the taste test the participants also reported on crystalline and granular textures in cheese, which has inspired the surface on the jesmonite blocks.



**Soft, sharp strong** -depicts a flavour and texture experience that starts of as soft, but as the cheese breaks down and dissolves in the mouth the flavour intensifies, the wave-like form expressing how the flavour proceeds and unravels.



**Rubbery:** Rubbery texture could be described as feeling resilient and sometimes squeaky. The final piece can be pressed from the top causing bouncing and wobbling effect in the piece. Rubbery was the most difficult piece to cast requiring 4,6 liters of silicone poured into a soft PVC-tube covered with acrylic loops that created the texture onto the final piece. The tube had to be soft in order to be able to easily peel the silicone from the tube after hardening. Silicone usually hardens overnight, but this piece was left to harden for over a week.



## Conclusion

This thesis aims to develop a general understanding for what sensory design is and can be regarded as by introducing it in the scope of relative theoretical background: through research, and various different concepts and practices. My aim was also to explore and harness methods through which to practice and execute sensorial design approach to a project, to demonstrate how it may contribute to the overall process and the final result.

Another objective was to improve Valio's and Finlandia's identities to make them more emotionally appealing for the target consumers by defining sensorial assets that would better response to the brand stories and help to create overall coherence. I am also hoping to have demonstrated how sensorial design choices such as colour and material may even support customers' sensory expectations when it comes to taste and the product promise.

To me sensory design seems to ultimately be about understanding people's underlying functions and expectations, and corresponding with them by optimizing encounters accordingly: aiming to engage consumers and viewers by removing the plasticity from the products and marketing and providing more genuine and holistic experiences.

The final pieces and the design process were exhibited in Aalto University's Beta Space from 6<sup>th</sup> to the 7<sup>th</sup> of August 2018 under the name of Sensorial Aesthetics. The exhibition served as an opportunity for the respondents from Valio to view and assess the work. My advisor Hanna Hiekkamies, Brand Director for Valio, expressed her contentment for the results by concluding that she views them as holding commercial worth and a potential to be taken further.

Research into sensory design has helped me to gain more understanding and awareness over some of the choices I make during a design process, since I sometimes rely on experience and intuition rather than conscious reasoning. It has also given me new ideas and inspiration on how to approach projects differently. I have also gained more confidence in an open-ended design process, which I often tend to fight against by trying to foresee and determine the outcome in order to maintain a feeling of being in control. Experiencing success from trusting a process can thus be considered as my main personal victory.

## Reflections

Conducting a research-based thesis was a mix of ups and downs. Despite experiencing confusion and uncertainty about the outcome during the research phase, in retrospect I feel content with what I've learned.

The amount of foreknowledge and literature reviews I covered in order to achieve a comfortable level of understanding sensoriality; learning about individual senses, sensory design, and other intertwining practices and methodologies from artistic and scientific points of view, felt slightly overwhelming. Combining the information and narrowing down to produce a coherent and linear framework felt like a struggle at times.

It seems that sensory design is still a relatively new practice, as the terminology is not constant. Terms of sensory design, multisensory design, sensorial design and multisensorial design kept being mixed, and there seemed to be no real logic in how they were being utilized. It seems that their individual meanings in relation to each other has not been fully established yet. However it appears that the concept of sensory design is still internationally further recognized as compared to Finland, where sensory design does not seem to be acknowledged as a discipline yet.

I familiarized myself with Michael Haverkamp's book about Synesthetic Design only after the design research phase, and I was happy to observe that even that my strategies would have been better having studied the book earlier, I had managed to deploy some similar elements and approaches the book was suggesting. If I were to practice same methods again in the future, I would develop the interviews and taste test further based on the knowledge gained thereafter.

I am happy to have gained competence in conducting an open-ended design process. The artwork inspired by the mouthfeel of cheese resulted from the ideas generated during the research, meaning that the result could have not been in the reach of my imagination beforehand. I understand the benefits in following the research plan: taking discoveries onboard as they occur and analyzing the results.



## References

### Literature

Choi, S.E. (2013). Chapter 3: Sensory Evaluation. In S. Edelstein, Food Science: An Ecological Approach. Jones & Bartlett Learning.

Gobe, M. (2009). Emotional Branding: The New Paradigm for Connecting Brands to People. New York: Allworth Press.

Haverkamp, M. (2012). Synesthetic Design: Handbook for a Multi-sensory Approach. Basel: Walter de Gruyter GmbH.

Herz, R. (2007). The Scent of desire: Discovering Our Enigmatic Sense of Smell. New York: William Morrow.

Krishna, A., et al. (2010). Sensory Marketing: Research on the Sensuality of Products. New York: Routledge.

Krishna, A. (2012). An Integrative Review of Sensory Marketing: Engaging the Senses to Affect Perception, Judgment and Behavior. Journal of Consumer Psychology 22, 2012.

Krishna, A., Cianb, L., Aydınoglu, N. (2017). Sensory Aspects of Package Design. Journal of Retailing 93, 1, 2017.

Lindström, M. (2005). Brand Sense: How to Build Powerful Brands Through Touch, Taste, Smell, Sight and Sound. London: Kogan Page.

Norman, D. (2004). Emotional Design: Why We Love (or Hate) Everyday Things. New York: Basic Books.

Rodriguez, C., Hultén, B., Brito, C. (2011). Sensorial Brand Strategies for Value Co-Creation. Innovative Marketing: Volume 7, Issue 2, 2011.

### Online

Brand Trends – Multisensory Experiences. (2015). Wink Brand Design. Retrieved from [winkbranddesign.com/post/brand-trends-multi-sensory-experiences](http://winkbranddesign.com/post/brand-trends-multi-sensory-experiences)

Canning, K. (2017). Dairy Processors Should Target the Powerful Millennial Demographic; Here's Why. Retrieved from <https://www.dairyfoods.com/blogs/14-dairy-foods-blog/post/92540-dairy-processors-should-target-the-powerful-millennial-demographic-heres-why>

Chamlee,V. (2016). How Dairy Queen is Targeting Women. Retrieved from [www.eater.com/2016/6/3/11852794/dairy-queen-female-millennials-mommy-bloggers](http://www.eater.com/2016/6/3/11852794/dairy-queen-female-millennials-mommy-bloggers)

Cohen, D., Crabtree, B. (2006). Qualitative Research Guidelines Project. Retrieved from [www.qualres.org/HomeSemi-3629.html](http://www.qualres.org/HomeSemi-3629.html)

Contatto – A New Culinary Culture. (n.d.) Project website. Retrieved from [contattoexperience.com/#](http://contattoexperience.com/#)

Cruz, A. (2017). How to Engage Your Customers with Sensory Branding? Retrieved from [www.onlinemarketinginstitute.org/blog/2017/03/engage-customers-sensory-branding/](http://www.onlinemarketinginstitute.org/blog/2017/03/engage-customers-sensory-branding/)

Emilie Baltz – Storytelling for the Senses. (n.d.). Personal website. Retrieved from [emiliebaltz.com/workshops/travel-cakes/](http://emiliebaltz.com/workshops/travel-cakes/)

Ewen, L. (2017). The 7 Trends that will Shape Apparel Retail in 2017. Retrieved from [www.retail-dive.com/news/the-7-trends-that-will-shape-apparel-retail-in-2017/433249/](http://www.retail-dive.com/news/the-7-trends-that-will-shape-apparel-retail-in-2017/433249/)

Fetell Lee, Ingrid. (2018). Where Joy Hides and How to Find It? Retrieved from [www.youtube.com/watch?v=A\\_u2WFTfbcg](http://www.youtube.com/watch?v=A_u2WFTfbcg)

Finlandia – A History of Great Taste. (n.d). Company website. Retrieved from <http://finlandiacheese.com/about/>

Freach, J. (2011). The Art of Design Research (and Why it Matters). Retrieved from [www.theatlantic.com/entertainment/archive/2011/05/the-art-of-design-research-and-why-it-matters/239561/](http://www.theatlantic.com/entertainment/archive/2011/05/the-art-of-design-research-and-why-it-matters/239561/)

The Global Dairy Sector: Trends and Opportunities. (2017). Deloitte. Retrieved from <https://www.qualres.org/HomeSemi-3629.html>

Golen, B. (2015). Millennial Marketing Top Brands: Trader Joe's Wins Big with Trade Up/Trade Down. Retrieved from [www.millennialmarketing.com/2015/07/millennial-marketing-top-brands-trader-joes-wins-big-with-trade-uptrade-down-mindset/](http://www.millennialmarketing.com/2015/07/millennial-marketing-top-brands-trader-joes-wins-big-with-trade-uptrade-down-mindset/)

Greenwald, M. (2016). Multi-sensory Innovation: Why it Matters, is Growing and 9 Ways to Excel. Retrieved from [www.forbes.com/sites/michellegreenwald/2016/02/17/multi-sensory-innovation-why-it-matters-is-growing-and-9-ways-to-excel-2/#2296a73650e6](http://www.forbes.com/sites/michellegreenwald/2016/02/17/multi-sensory-innovation-why-it-matters-is-growing-and-9-ways-to-excel-2/#2296a73650e6)

Karana, E., Van Kesteren, I. (2013). Materials Affect: The Role of Materials in Product Experience. Retrieved from [www.researchgate.net/publication/246419421\\_80516\\_-\\_Karana\\_and\\_van\\_Kesteren\\_book\\_chapter\\_design\\_emotion](http://www.researchgate.net/publication/246419421_80516_-_Karana_and_van_Kesteren_book_chapter_design_emotion)

Krishna, A. (n.d.) Personal website. Retrieved from [www.aradhnakrishna.com/](http://www.aradhnakrishna.com/)

Krishna, A., Schwarz, N. 2014. Sensory Marketing, Embodiment, and Grounded Cognition: A Review and Introduction. Journal of Consumer Psychology, 2014. Retrieved from [http://www.neuromarkewiki.com/images/0/05/Sensory\\_marketing\\_krishna\\_and\\_schwarz\\_2014.pdf](http://www.neuromarkewiki.com/images/0/05/Sensory_marketing_krishna_and_schwarz_2014.pdf)

Lupton, E., Lipps, A. (2018). Why Sensory Design? Retrieved from [www.cooperhewitt.org/2018/04/03/why-sensory-design/](http://www.cooperhewitt.org/2018/04/03/why-sensory-design/)

Martino, V. (2018). The Six Mega-trends That Will Shape the US Food Industry in 2018. Retrieved from [www.just-food.com/comment/the-six-mega-trends-that-will-shape-the-us-food-industry-in-2018\\_id138218.aspx](http://www.just-food.com/comment/the-six-mega-trends-that-will-shape-the-us-food-industry-in-2018_id138218.aspx)

Matheny, R. (2016). Creating Meaningful Memories through Sensory Experiences. Retrieved from [www.youtube.com/watch?v=O4bGOvkkHcM](http://www.youtube.com/watch?v=O4bGOvkkHcM)

Patel, D. (2017). 18 Marketing Trends to Watch in 2018. Retrieved from [www.entrepreneur.com/article/305047](http://www.entrepreneur.com/article/305047)

Saylor Academy. (2012). Field Research: What Is It and When to Use It? Retrieved from [saylordot-org.github.io/text\\_principles-of-sociological-inquiry-qualitative-and-quantitative-methods/s13-01-field-research-what-is-it-and-.html](https://org.github.io/text_principles-of-sociological-inquiry-qualitative-and-quantitative-methods/s13-01-field-research-what-is-it-and-.html)

Richardson, M. (2015). Savor the Moment: The Peculiar Connection Between Taste and Memory. Retrieved from [www.brainfacts.org/thinking-sensing-and-behaving/learning-and-memory/2015/taste-and-memory](http://www.brainfacts.org/thinking-sensing-and-behaving/learning-and-memory/2015/taste-and-memory)



Spence, C. (2015). Designing Multisensory Experiences. Retrieved from [www.youtube.com/watch?v=uAtVHF23VVM](https://www.youtube.com/watch?v=uAtVHF23VVM)

Spence, C. (2015). Multisensory Flavor Perception. *Cell*: Volume 161, Issue 1, 2015. Retrieved from [www.sciencedirect.com/science/article/pii/S0092867415002603](https://www.sciencedirect.com/science/article/pii/S0092867415002603)

Spence, C., et al. (2013). A Touch of Gastronomy. *Flavour Journal*, 2013. Retrieved from [flavourjournal.biomedcentral.com/articles/10.1186/2044-7248-2-14](https://flavourjournal.biomedcentral.com/articles/10.1186/2044-7248-2-14)

Spence, C., Ngo, M.K. (2012). Assessing the Shape Symbolism of the Taste, Flavour, and Texture of Foods and Beverages. *Flavour Journal*, 2012. Retrieved from [flavourjournal.biomedcentral.com/articles/10.1186/2044-7248-1-12](https://flavourjournal.biomedcentral.com/articles/10.1186/2044-7248-1-12)

Twilley, N. (2015). Accounting for Taste. Retrieved from [www.newyorker.com/magazine/2015/11/02/accounting-for-taste](https://www.newyorker.com/magazine/2015/11/02/accounting-for-taste)

Valio, a Dairy Co-Operative Owned by Farmers. (n.d). Company website. Retrieved from [www.valio.com/about-valio/](https://www.valio.com/about-valio/)

Verbeek, C. (2016). Inhaling History and Smelling the Future. Retrieved from [www.youtube.com/watch?v=g37Qe8Kriuo](https://www.youtube.com/watch?v=g37Qe8Kriuo)

Vision on Food and Design. (n.d). Marijke Vogelzang statement. Retrieved from [marijevogelzang.nl/vision/](https://marijevogelzang.nl/vision/)

Wellesley College. (2013). Study Reveals Insight into how Brain Processes Shape, Color. *Science Daily*. Retrieved from [www.sciencedaily.com/releases/2013/12/131219102759.htm](https://www.sciencedaily.com/releases/2013/12/131219102759.htm)

Wist, A. (2015). The International Conference on Food Design Reveals the Designer's Role in Food Systems and Hospitality. Retrieved from [thisismold.com/event/conferences/the-designers-role-in-food-systems-and-hospitality-the-2nd-annual-food-design-conference#.W5ocrhlzYWo](https://thisismold.com/event/conferences/the-designers-role-in-food-systems-and-hospitality-the-2nd-annual-food-design-conference#.W5ocrhlzYWo)

Youssef, J., Spence, C. (2011). Multisensory Taste Perception Modules. Retrieved from [www.kitchen-theory.com/multisensory-taste-perception/](https://www.kitchen-theory.com/multisensory-taste-perception/)

Youssef, J., Spence, C. (2016). What is a Sensploration? Retrieved from [www.kitchen-theory.com/what-is-a-sensploration/](https://www.kitchen-theory.com/what-is-a-sensploration/)

## Image Sources

### Pages 20 - 21

Fig 1. Atelier Oi. (2016). Perfumed Paper Fans. Retrieved from [www.atelier-oi.ch/en/work/eoles/](https://www.atelier-oi.ch/en/work/eoles/)

Fig 2. Studio Trippin. (2018). Rocking Horse. Retrieved from [www.keenonwalls.com/2018/03/23/whats-good-iceland/](https://www.keenonwalls.com/2018/03/23/whats-good-iceland/)

Fig 3. Emilie Baltz. (n.d.). Travel Cakes. Retrieved from [emiliebaltz.com/workshops/travel-cakes/](https://emiliebaltz.com/workshops/travel-cakes/)

Fig 4. Nadine Goepfert. (2013). The Garments May Vary. Retrieved from [nadinegoepfert.com/the-garments-may-vary](https://nadinegoepfert.com/the-garments-may-vary)

Fig 5. Studio Trippin. (2018). Rocking Horse. Retrieved from [studiotrippin.com/Rocking-Horse](https://studiotrippin.com/Rocking-Horse)

Fig 6. Giulia Soldati. (2017). Contatto Eating Experience. Retrieved from [www.giuliasoldati.com/Contatto-Eating-Experience](https://www.giuliasoldati.com/Contatto-Eating-Experience)

### Page 23

Bouba/Kiki effect. Retrieved from [en.wikipedia.org/wiki/Bouba/kiki\\_effect#/media/File:Booba-Kiki.svg](https://en.wikipedia.org/wiki/Bouba/kiki_effect#/media/File:Booba-Kiki.svg)

### Page 40

Glossier NYC showroom. Retrieved from <https://www.racked.com/2017/7/12/15949530/glossier-international-shipping-canada-uk>

Glossier's body products. Retrieved from [coveteur.com/2017/09/12/inside-anastasia-beverly-hills-headquarters/](https://coveteur.com/2017/09/12/inside-anastasia-beverly-hills-headquarters/)

Glossier phone wallpaper. Retrieved from [www.racked.com/2017/7/12/15949530/glossier-international-shipping-canada-uk](https://www.racked.com/2017/7/12/15949530/glossier-international-shipping-canada-uk)

### Pages 44 - 45

Snohetta. (2011). Tverrfjellhytta –Norwegian wild reindeer pavilion. Retrieved from [snohetta.com/project/2-tverrfjellhytta-norwegian-wild-reindeer-pavilion](https://snohetta.com/project/2-tverrfjellhytta-norwegian-wild-reindeer-pavilion)

Antti Huttunen. (2017). National park in Finland. [finlandnaturally.com/destinations/helsinki/9-reasons-why-helsinki-is-the-nature-capital-of-the-entire-world/](https://finlandnaturally.com/destinations/helsinki/9-reasons-why-helsinki-is-the-nature-capital-of-the-entire-world/)

Tham & Videgård Arkitekter. (2010). Atrium House. Retrieved from [www.dezeen.com/2017/05/25/tham-videga-ard-arkitekter-atrium-house-holiday-home-gotland-sweden/](https://www.dezeen.com/2017/05/25/tham-videga-ard-arkitekter-atrium-house-holiday-home-gotland-sweden/)

Oiva Toikka. (1972). Linnut -glass birds. Retrieved from [www.gloria.fi/artikkeli/sisusta/suosittua\\_designia\\_oiva\\_toikan\\_linnut](https://www.gloria.fi/artikkeli/sisusta/suosittua_designia_oiva_toikan_linnut)

Avanto Architects. (2006). Löyly -public sauna in Helsinki. Retrieved from [avan.to/works/loyly/](https://avan.to/works/loyly/)

Ilmari Tapiovaara. (1948). Domus Lux Lounge chair. Retrieved from [midmod-design.com/archive/4c2bb0e2c1ade/Ilmari-Tapiovaara-Domus-Lux-lounge-chair-1948](https://midmod-design.com/archive/4c2bb0e2c1ade/Ilmari-Tapiovaara-Domus-Lux-lounge-chair-1948)

### Pages 58 - 59

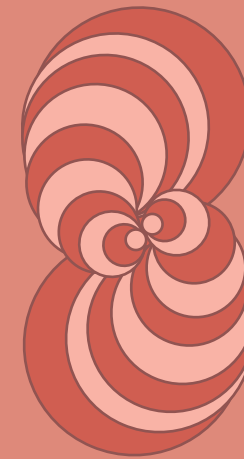
Fig 1. Studio Swine. (2017). New Spring. Retrieved from [www.roof-magazine.com/en/post/cos-x-studio-swine](https://www.roof-magazine.com/en/post/cos-x-studio-swine)

Fig 2. Valentina Cameranesi. (2018). Avalon series. Retrieved from [www.valentinacameranesisgroi.com/](https://www.valentinacameranesisgroi.com/)

Fig 3. Wang & Söderström. (n.d.). Retrieved from [www.itsnicethat.com/articles/wang-and-soderstrom-miscellaneous-130417](https://www.itsnicethat.com/articles/wang-and-soderstrom-miscellaneous-130417) and [readymag.com/u19113720/1179753/](https://readymag.com/u19113720/1179753/)

Fig 4. Giorgio Morandi. (n.d.). Still life painting. Retrieved from [www.lm-magazine.com/blog/2013/09/19/giorgio-morandi-retrospective/](https://www.lm-magazine.com/blog/2013/09/19/giorgio-morandi-retrospective/)

Fig 5. Victoria Ling. (2012). Animal Vegetable Mineral -still life photography. Retrieved from [www.yellowtrace.com.au/victoria-ling-still-life-photography/](https://www.yellowtrace.com.au/victoria-ling-still-life-photography/)



## Acknowledgements

Tiina Aarras  
Jaana Beidler  
Anna van Der Lei  
Hanna Hiekkamies + Valio

Interviewees in Boston  
Test group in Finland  
Selki-asema  
Aleksi Tikkala ©photography  
Trang Chung  
Richard Scott

Family & Friends  
Jussi

“Lockers taste like  
chicken nuggets”

-Unknown synesthete